

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Attorney Docket No.: 3275.06US03

Horne et al.

Confirmation No.: 1933

Application No.: 10/822,642

Examiner: John M. Hoffman

Filed: April 12, 2004

Group Art Unit: 1791

For: OPTICAL FIBER PREFORMS

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

REPLY BRIEF FOR APPELLANT

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REPLY BRIEF

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Sir:

INTRODUCTORY COMMENTS

In response to the Examiner's Answer dated February 23, 2009, Appellant submits the following additional comments. Appellant addresses only some of the clear errors of law and errors of facts presented in the Examiner's Answer. The remaining issues are discussed in detail in Appellant's Brief.

*Please grant any extension of time necessary for entry; charge any fee due to Deposit Account No. 50-3863.*

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this paper is being transmitted electronically to the U.S. Patent and Trademark Office on the date shown below.

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/Elizabeth Q. Shipsides/  
Elizabeth Q. Shipsides, Registration #57,529

### Evidence Included with the Main Brief

The Examiner asserted on page 12 of the Examiner's Answer that the Evidence Appendix did not include pages from the Webster's Dictionary or a copy of WO 02/32588. The Dictionary issue is moot since this evidence related to the section 112, second paragraph, which has been withdrawn. With respect to WO 02/32588, this application was referred to in the brief only to put the analysis in context. It was not specifically recited for evidence in specific text of the PCT application.

### Errors of Fact and Law Relating to the Coating Density

The Examiner's conclusion that the density feature of the claimed invention was obvious was based on clear errors of fact and law. Claim 20 recites the feature of "the coating having a fully densified mass density, wherein the coating has an average density that is a factor within the range from about 0.02 to about 0.55 of the fully densified mass density". The Examiner acknowledges on page 6 that none of the references teach a density within the claimed range. The Examiner proceeds to argue inherency with respect to a material having a density between 0 and 1. The Examiner also asserts that the claimed range covers more than half of the physical range. However, it is a clear error of law to not have put this analysis in the context of the claimed subject matter. An analysis for obviousness under the KSR/Graham structure requires an analysis of the claimed subject matter as a whole in view of the teachings of the cited references as a whole. The Examiner's abstract analysis is not relevant to a finding of obviousness.

On page 6 of the Examiner's Answer, the Examiner stated "However it is inherent that it cannot be lower than 0 nor higher than 1.00. Nothing (solid) can have a density of less than 0, nor can anything have a density higher than 100% of its fully densified mass. Thus, Hicks's coating is between 0 and 1.00. The claim range 0.02 – 0.55 covers half of the 0 – 1.00 range." This statement is misleading and reflects clear factual and legal errors. Hicks fails to mention density, let alone average density relative to the fully densified mass density. While it might be

true that the physical range of a coating's average density is a factor within the range from 0 – 1.00 of the fully densified mass density of the coating, it does not mean that the physical range is disclosed in Hicks. Hicks does not disclose the density. Therefore, Hicks does not provide a context for evaluating the significance of the portion of the density range claimed by Appellant. The portion of the physical range covered by Applicant's claim is only relevant if the cited art and knowledge of a person of ordinary skill in the art suggest a reason that the claimed range would be relevant in the context of the claimed invention.

On pages 6 and 7 of the Examiner's Answer, the Examiner cited case law on "overlap of ranges" and stated "Since applicant's range covers over half of the prior art range, a prima facie case of obviousness exists. It would have been obvious to perform routine experimentation to determine the optimal parameters." This is misleading and reflects clear error. First, the Examiner based his blatantly faulty obviousness rejection on the mistaken presumption that Hicks discloses the physical range of the average density relative to the fully densified mass density when Hicks fails to even mention density. The case law "overlap of ranges" applies when the claimed ranges overlap or lie inside ranges disclosed by the prior art, but no range has been disclosed by Hicks. The Examiner concluded obviousness because the claimed range is over half of the physical range 0-1.00 without any further explanation.

The Examiner further asserts on page 7 of the Answer that "It would have been obvious to perform routine experimentation to determine the optimal process parameters." With all due respect, the Examiner has failed to explain what parameters should be used to determine this. The approaches of Hicks and Appellant are different from each other. Hicks is based on low migration of dopants, while Appellant's approach is based on diffusion of dopants from a highly doped coating. The Examiner's position is clearly deficient due to a lack of specifying what possible parameters should be used to perform this asserted optimization.

The Examiner has not and cannot point out any good reason why one of ordinary skill would pursue densities within the claimed range of the physical range. There is simply no recognized problem or need in the art that would require one of ordinary skill to create a coating with an average density that is a factor within the range from about 0.02 to about 0.55 of its fully densified mass density.

### Error of Law Relating to Coating Composition

On page 5 of the Examiner's Answer, the Examiner states "Miller from col. 3, lines 64 to col. 4, lines 17, as well claim 2 (and lines 9-10 of claim 1) which reasonably discloses using combinations of rare earths and non-rare earths in glass. See also col. 1, lines 43-44 which indicate that non-rare earths are common modifiers in glass. It would have been obvious to include the common modifiers/dopants for any of their well-known modifying abilities in the Hicks soot perform, and then consolidate the interior, but leave the outer coating layer intact." This might be a correct interpretation of Miller, but it fails to address the claimed feature Examiner cited it for. The claim recites "wherein the coating on the core structure comprises...a rare earth element **and** a dopant comprising a metal element that is not a rare earth element."

Miller discloses a laundry list of different oxides that includes metals that are rare earth elements and non-rare earth elements for forming glasses, but Miller does not disclose using **both** a rare earth element **and** a non-rare earth element in forming the same glass structure. Miller's examples are directed to the use of one metal that is a non-rare earth element, two metals both of which are non-rare earth elements, or one metal that is a rare earth element in a single glass structure.

### Errors of Fact and Law Relating to Coating and Core Compositions

On page 5 of the Examiner's Answer, the Examiner stated "It is noted that at page 15, lines 2-3 Appellant admits that Hicks implies the coating and core should have the same composition. Examiner points this out as an admission that one would understand that if one were using a rare earth plus other dopant in the core, one would understand that the coating would also have the same dopants in the coating." These statements are misleading and irrelevant to the feature being addressed. First, the feature is directed to the coating comprising a rare earth element and a metal that is not a rare earth element NOT whether the coating and core has the same composition. Second, the claim recites a feature that is in direct opposition to the

alleged admission. The claim recites "the coating and the core structure have different dopant compositions," and the Examiner concedes that Hicks discloses that the coating and core has the same composition.

In the full paragraph on page 13 of the Answer, the Examiner somehow converts Appellant's analysis relating to the claimed reference to different dopant compositions into something vaguely relating to whether or not the compositions are the same. First it is not at all clear what the Examiner's assertions relating to index of refraction have to do with the claim language relating to different dopants. It is even less clear what "channels, webs and other structures" have to do with dopant levels. The Examiner's arguments are completely irrelevant to the issues relating to the claim language.

With all due respect, the Examiner's assertions in the first full paragraph on page 14 are not understandable. The Examiner "tends to agree" that the Examiner's analysis of the term "dopant composition" is unreasonable, but then states that this is "an irrelevant standard." The Examiner then states that the claims are read in light of the specification and art. With all due respect, there is nothing in Appellant's specification that changes the ordinary meaning in the art of the terms "dopant concentration." And the Appellant has repeatedly pointed out serious errors in the Examiner's analysis.

Then, the Examiner wanders astray due to Appellant's statement that the core can be undoped. If the core is undoped and the coating is doped, then the core and the coating clearly have different "coating compositions." No person of skill in the art would have any problems with this analysis. Appellant respectfully cannot understand the Examiner's inability to grasp this concept of dopant composition. The Examiner further asserts that "Applicant offers no analysis as to the meaning of 'dopant composition.'" With all due respect, "dopant composition" has its plain meaning as would be understood by a person of ordinary skill in the art.

On page 8 of the Examiner's Answer, the Examiner stated that "See Hicks, col. 4, lines 2-7 which teaches adding dopants where desired. Thus Hicks clearly envisioned not having the same exact dopant composition identical throughout the rod. They may be desired in some locations, and not in others. Thus given a dopant composition on the outer layer, it is clear that there is at least one location in the consolidated portion which has a different dopant

composition.” These statements are misleading. Just because Hicks teaches that dopants can be added, it does not mean that the rod would have varying compositions at different locations of the rod. The standard is not what the prior art could envision or could do but what the prior art discloses. It is further noted that on page 6 of the Examiner’s Answer, the Examiner stated in direct contradiction to the statements currently be addressed that “Appellant admits that Hicks implies the coating and core should have the same composition.”

On page 8 of the Examiner’s Answer, the Examiner cited case law on “elimination of a step or an element and its function” and stated “Alternatively and/or additionally, since Appellant states on page 15, at line 19, that the core can be undoped, this is deemed to be an admission that an undoped section still has a ‘dopant composition.’ Such would be obvious, because it would have been obvious to eliminate the use of dopant in a given portion of the Hicks preform, if the dopant function were not desired in that portion.” This is confusing, misleading, and contrary to previous statements made by the Examiner. The Examiner’s application of the case law “elimination of a step or an element and its function” changes the principle of operation behind Hicks’ method of forming an optical fiber preform. Hicks’ is directed to forming a core and cladding to provide a sharp step change in the index of refraction or a clean interface between the core and cladding. Adding the optional dopant to the core and its coating and removing it from the either only the core or the coating would change the principle of operation behind Hicks because the coating would prevent the clean interface between the core and the cladding.

#### Error of Law in Picking Teachings from Kobayashi

In the Applicants’ Response to Arguments on pages 14 and 15 of the Answer, the Examiner states that “Whereas Appellant points out that Kobayashi would teach a dense layer, the rejection does not rely on the Kobayashi deposition method. Rather, Kobayashi is relied on to show what is known: the use of a laser avoid the problem of water from flames...it would have been obvious to decline to adopt Kobayashi’s direct impingement so as to avoid the dense layer (and heed only the advice to avoid flames) – because Keck teaches the desire to have a non-dense layer.” Applicant notes that there is no cited reference named Keck. Simply, it is

unclear which cited reference, if any, teaches a non-dense layer. The Examiner correctly notes that a reference can be used for all that it teaches, but then the Examiner selectively picks from Kobayashi what supports his position and discards closely related teachings that do not support his position. The Examiner cites Kobayashi for it teaching "of laser methods over flame methods." Yet, the Examiner then ignores the teaching in Kobayashi of direct impingement of the laser "to avoid the dense layer." What the Examiner has failed to show is a reference teaching of laser methods without direct impingement over flame methods. The Examiner is ignoring closely related teachings in Kobayashi without any justification contrary to the instructions from KSR and Graham. Additionally, the Examiner appears to use Appellant's alleged statement that Kobayashi would teach an undesired dense layer as a reason to modify Kobayashi's explicit disclosure of the light beam direct impingement on the mandrel to avoid the dense layer.

#### Error in Fact and Law Relating to Directing the Light Beam

The Examiner's conclusion relating to the light beam feature is based on clear errors of fact and law. With respect to claim 31, the feature relates to the claim language that "the light beam passes through the reactant stream without striking the glass rod." On pages 10 and 11 of the Answer, the Examiner acknowledged the deficiencies of the cited references: "Hicks and Miller discuss nothing about lasers," and Kobayashi and Berkey discuss laser beams impinging on a mandrel. On page 11 of the Answer, the Examiner stated that "Bi's soot is directed toward a particle trap 422" and reasoned that "[i]t would have been obvious to use Bi's method of making particles as the Berkey laser arrangement so as 'to form soot which is directed toward a mandrel' (i.e. toward Hicks' rod) – and then to do the directing – like Berkey's directed soot, 20." Examiner further explained that whether particles are being directly used as they are being produced or collected for later use are obvious variants absent a showing of secondary considerations. Furthermore, the Examiner cited case law on "changes in sequence of adding ingredients" and "making separable."

With all due respect, the use of case law is not appropriate. The sprinkling of a powder is not the same as the formation of a coating. The use of a powder to form a coating can be a



complex process, and the Examiner has provided no support in the art for his proposition. The Examiner grossly simplifies the claimed subject matter to a scenario of when the particles are being used and fails to address the nature of the integrated method. The rejection is based on impermissible hindsight reconstruction that fails to take into account **only** knowledge from one of ordinary skill in the art without gleaning knowledge from the Applicants' own disclosure. Additionally, contrary to the Examiner's assertion, Bi is not directed to a soot as asserted by the Examiner but loose particles. Bi repeatedly stressed the objective of collecting high quality unagglomerated particles. Bi does not teach or suggest the formation of a coating.

#### Comments on Examiner's Response to Arguments

The Examiner argues on page 12 that the claimed density is a matter of routine experimentation to determine optimal processing parameters. However, the Examiner fails to say what these parameters are. There are reasonable arguments that ideally the proper density should be 1. Only glasses that are fully dense will transmit light without significant loss. The cited prior art teaches sharp composition boundaries, which similarly suggests fully dense glass is desirable. Applicants' approach involves the migration of dopant atoms. Also, Applicants' approach involves efficient deposition with a selectable dopant composition. It is far from clear that the prior art approaches or even Applicants' approach are optimized in the sense that they cannot be improved upon. However, the prior art approaches and Applicants' approaches are significantly different from each other. While Applicants' approach is believed better, it is not asserted to be perfect in all aspects. With all due respect, the Examiner's assertion of routine optimization without any statement of what is being optimized makes a mockery of the legally required Graham/KSR obviousness analysis.

On page 13, the Examiner points to the description in Hicks of "channels, webs and other structures" as a composition difference. With all due respect, a person of ordinary skill in the art would not consider a hole or structural feature as a composition change. This is not a reasonable claim construction.

With respect to the dopant composition, on page 13, the Examiner states that the "claims do not preclude identical compositions: the claims require "different dopant compositions" -

there is nothing which precludes identical compositions in addition to the different compositions." With all due respect, Applicant cannot understand this statement. A composition of matter has a composition. Two compositions of matter cannot be simultaneously identical and different. With all due respect, whatever construction the Examiner seems to be attributing to the claims, it cannot be reasonable as interpreted by a person of ordinary skill in the art. A person of ordinary skill in the art can only interpret the dopant composition as the amount and type of dopant atoms introduced into a host material. The dopant composition of two materials simply cannot simultaneously be identical and different.

With respect to the Examiner's assertion at the top of page 15, water may or may not still be formed with a laser. For example, if silane is reacted with oxygen, water is still a by product of silica formation. The issue is not whether or not there is a laser, but what is the chemistry of the reaction. Applicant's process generally does not avoid the formation of water with the synthesis of an inorganic oxide, and this is not a problem for the synthesis. The Examiner has cited a solution in search of a problem.

With respect to the Examiner's construction of a flowing reactor on the bottom of page 15, the Examiner cites Gardner US 6919054. How the Examiner can read the cited text in Gardner and conclude that all that is required is a chamber is incredible. The cited text in Gardner reads in part "Flow reactors comprise a reaction chamber in which flow is introduced. Flow is maintained by venting the flow through an exhaust. ..." The Examiner seems to have removed the flow part of this completely. Also, the Examiner is ignoring all the rest of the teachings in Gardner and the present application.

#### CONCLUSIONS AND REQUEST FOR RELIEF

Appellant submits that the pending claims are not rendered prima facie obvious over the combined teachings of the cited references. Appellant believes that the Patent Office has failed to meet their burden of persuasion with respect to unpatentability of any of the claims on the present record. Thus, Applicants respectfully request the reversal of the rejections of claims 20, 25, 26, 31-39, 41 and 43-48.

Respectfully submitted,

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